HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF
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England's Declining Birth-rate and Marriage-rate.—DR. H. MAY (*Public Health*, September and November, 1898) calls attention to the fact that the birth-rate for the whole of England and Wales fell uninterruptedly from its highest point, 36.3 in 1876, to 30.1 in 1890, and again, with fluctuations, to 29.7 in 1896–1897, and asserts that this fall is proof of a general change in the social habits of the country. Coincidently there has been a considerable but not so pronounced fall in the marriage-rate, which reached its highest point, 17.6, in 1873, then fell during the next six years uninterruptedly to 14.4, and has fluctuated since then between 14.2 and 16, the latter figure being for 1897 and the highest for twenty years. The decline in the birth-rate amounts to over 15 per cent. and in the marriage-rate to 10 per cent., and the latter will account for only part of the former. The balance of the decline in the birth-rate he ascribes to other and unnatural causes. It appears that the registered deaths from premature birth have risen steadily from fourteen per thousand in 1882 to nineteen in 1896, and the deaths from abortion and miscarriage from six to fourteen per million of the population in the last ten years. The great fall in the general death-rate should show a diminished infantile death-rate, but, instead, it appears that the mortality of children under a year shows no decrease. He points out that the changes in the birth-rate and marriage-rate will produce a derangement of the age distribution, causing the proportion living at different age-periods to vary and rendering the number of each at a census an imperfect guide to the following inter-censal years. A part of the fall in the general death-rate is accounted for by the fact that the number of children under five fell from 136 to 122 in 1000 between 1881 and 1891, a diminution which would necessarily affect the general death-rate, inasmuch as the rate at that age period is very high.

The marriage-rate of the country can no longer, he says, be considered as the "barometer of its prosperity," for in the year of highest prosperity during the past twenty years it was but 16, which is no higher than the lowest rate of any of the preceding twenty year periods. He attributes the decline to "an intelligent selfishness produced by modern civilization" and shows that marriage is postponed and early marriages are especially diminished. Marriages under twenty-one years have fallen, in the period 1885–1896, from 81 to 59 per 1000 males, and from 230 to 188 per 1000 females married. The mean age at marriage shows considerable increase, and this increase is steady. There is a general increase in the age of marrying bachelors, a smaller one in that of spinsters, a considerable one in that of marrying widows, but a slight decrease in that of widowers. The increase in the number of marriages of persons over thirty years of age amounts to 94 per 1000.

Infection from the Hands of Tuberculous Persons.—DR. E. R. BALDWIN (*Philadelphia Medical Journal*, December 3, 1898), while conceding that the danger from a few tubercle bacilli on the fingers is very slight, draws attention to the scant mention of that mode of infection in the abundant literature of the subject. With the object not so much to determine the degree of danger from infected hands, as to note the differences in respect of the presence of bacilli on the hands of tuberculous patients who use handkerchiefs for the reception of sputa and those using cuspidors or cloths, he instituted a series of experiments in which he washed the fingers of twenty-eight persons in whose expectorations tubercle bacilli were known to exist. Ten of these were private patients, half of whom used cuspidors and occasionally handkerchiefs, and the other half either cuspidors or cloths; the others were sanitarium patients who used cuspidors only. The patients had no knowledge in any case that the tests were to be made, and the time that had elapsed since the last previous washing varied from ten minutes to twelve hours. The washings from the ten private patients and from five of the others were used to inoculate guinea-pigs, two of which were taken for each case. In eight of the ten private cases one or both of the pigs became tuberculous; in the other two the results were entirely negative, and it deserves to be noted that the two patients concerned were scrupulously careful to keep their hands from becoming soiled. In two of the five sanitarium cases, one pig in each was found to be tuberculous. The washings from the other thirteen were centrifugated and examined microscopically, and in three of the sediments the bacillus was found.

In conclusion he submits the following points:

1. Living tubercle bacilli are not infrequently present on the hands of patients who are not careful in the use of handkerchiefs, cloths, and even cuspidors when the expectoration is abundant.
2. No precaution against contamination of the hands can avail better than the use of cuspidors combined with frequent ablutions with soap and water.
3. With the present usage of society, people are not likely to use pocket-cuspidors, except in institutions. Consequently, handkerchiefs will be used in public, especially as anti-spitting laws are forcing individuals to use them. There is, therefore, urgent necessity for a cheap, comparatively impervious and soft handkerchief that can be burned.

Germicidal Action of Alcohol.—DR. RAFAEL MINERVINI (*Zeitschrift für Hygiene und Infectionskrankheiten*, xxix., October 25, 1898) was experimenting with alcohol as a disinfectant when Epstein's results were published (see this JOURNAL, September, 1898). As his results were not in entire agreement with these, he undertook the whole investigation over again and enlarged its scope. His published conclusions are as follows: Alcohol has in general a very slight germicidal action. At normal temperatures it may kill non-spore-bearing bacteria, but not the spore-bearers. Its action is strongest in 50 to 70 per cent. strength and weakest when in strongest concentration (absolute alcohol). When boiled, or heated under pressure, it acts according to its percentage of contained water. Alcoholic solutions of disinfectants have less effect than the corresponding aqueous solutions, and their germicidal power varies inversely as the strength of the alcohol in which they are dissolved.

Physiological Action of Copper in Foods.—The widely different opinions of the importance of copper in foods led BAUM and SEELIGER (*Zeitschrift öffentl. Chem.*, 1898, through *Zeitschrift für Untersuchung der Nahrungs und Genussmittel*, July, 1898) to carry on a series of experiments on the subject that extended over three years. The questions at issue were as to chronic poisoning, the elimination of copper in the milk, its deposition in the fœtus, and the comparative poisonous influence of the several copper compounds, the intensification of the influence by increased doses, and the pathological changes in the different organs.

The conclusions reached were as follows: Copper taken by the mouth is, as a rule, not eliminated in the milk; occasionally it appears in small traces, and very exceptionally in weighable amounts. The milk of animals that had been dosed for a long time exerted no perceptible deleterious effects when fed to others, even when it constituted the sole food. Absorbed into the system from the alimentary canal, the metal enters the fœtus in comparatively large amounts and is stored in its organs. Given in small daily doses it is almost wholly absorbed and in great part again eliminated, but the administration of larger amounts is not followed by increased absorption; on the contrary, absorption is not infrequenly lessened. Thus absorption and elimination appear to go on with no fixed rules. Elimination by bile and pancreatic and intestinal juices may be extended as much as five months after the administration of the last dose, and it may be complete in from four to five weeks. Long-continued administration of small doses may produce a true chronic poisoning. The several preparations possess different degrees of toxicity. The most poisonous is the oleate, then the acetate, then the sulphate, and lastly cuprohæmol, which, even in very large doses, produces hardly a perceptible effect.

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